
The Edit Functions

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The Edit Functions

Note:

This condensed version of CADD PRIMER is intended to give you an overview of CADD. It includes only important topics from CADD PRIMER. It does not include any diagrams. CADD PRIMER includes more than 100 diagrams that illustrate the working of CADD. For complete understanding of CADD refer to CADD PRIMER. This complete book is available for download for \$9.95 at <http://www.caddprimer.com> or you can order printed copies through the publisher listed at the end of this chapter.

About this Chapter

This chapter focuses on CADD's editing module. The edit functions make CADD a very powerful drawing tool and contribute to significant timesaving in design and drafting. They provide a number of drawing shortcuts and enable you to fix drawing mistakes.

This chapter illustrates techniques by which you can manipulate drawing objects. It illustrates how to erase, move, copy, rotate, enlarge and reduce drawing objects. You will also learn how to use the edit functions as a drawing aid tool to make quick corrections.

The chapter ends with a read-through exercise that illustrates the basic steps to draw an engineer's office and an engineering complex plan.

Key Terms in this Chapter

Term	Description
Array	A set of multiple copies of selected objects.
Base point	A reference point used as a guide to move or copy objects.
Editing window	An imaginary rectangle formed by two diagonal points that is used to select drawing objects for editing.
Fillet	Joining lines or arcs at a corner.
Mirror	Creating a new object that is a mirror image of an original object.
Mirror-axis	An imaginary line along which the objects are mirrored.
Move	Moving selected objects from one place to another.

Stretch	Stretching a diagram in a specified direction.
Trim	Cutting drawing objects along a selected edge.

The Role of Edit Functions

The edit module provides great flexibility in changing CADD drawings. If you were to draw using only the drawing functions of CADD, it will probably take the same amount of time as it would on a drawing board. But CADD's editing functions make CADD a dynamic tool that results in significant timesavings.

Changes that may look extremely difficult on a drawing board can be easily accomplished with CADD. Even if you have to make a major change, chances are that you won't have to redraw it from scratch. You can manipulate the diagrams in a number of ways and may be able to rearrange the existing pieces of the drawing to fit the new shape.

The following are the basic capabilities of the edit module:

- Erasing drawing objects
- Moving drawing objects
- Copying drawing objects
- Changing the appearance of drawing objects

Selecting Objects to Edit

In order to apply any of the edit functions, you need to select the drawing objects that need to be edited. CADD provides a number of methods by which you can select drawing objects. You can edit one object at a time, a group of objects, or the entire drawing at once.

*The following are the basic methods for selecting drawing objects for editing:
(The exact procedures vary from one program to another)*

- Selecting objects one by one
- Selecting objects by enclosing them in a window
- Selecting objects using selection filters
- Making groups of selected objects

Note: The above topics are described in detail in CADD PRIMER.

Erasing Drawing Objects

CADD provides a fast, accurate and convenient means of erasing drawings. Once you have entered the erase command, you are in the erase mode; any

objects you select now will be instantly erased. You can use any method described above to select the objects.

Note:

The erase function is very powerful; it must be used with great caution. It can erase large amounts of information within seconds. If you make a mistake while erasing, be sure to take quick action. You can use the undo feature of CADD to instantly disregard the effect of the last command. Do not go any further with the mistake; it will only make it more difficult to fix the drawing.

Moving Drawing Objects

CADD allows you to move drawing objects within a drawing in a convenient manner. Unlike on a drawing board, you don't need to first erase and then redraw in a new place. You can simply rearrange the existing drawing objects, as you like. This is a very useful tool for analyzing design alternatives and making quick adjustments to drawings.

To move the objects, the first step is to select the objects that are to be moved. The second step is to indicate a base point. The base point acts as an anchor for the selected objects. Finally, indicate a relocation point (or destination point). The relocation point determines the new location of the selected objects. All the objects are moved relative to the base point and the relocation point. Let's say you indicate the relocation point 4'-0" to the right of the base point. All the selected objects will be moved 4'-0" to the right. (An exercise using the move function is included in CADD PRIMER)

Copying Drawing Objects

CADD allows you to make quick and easy copies of existing drawing objects. You can copy individual drawing objects or the entire drawing all at once. You can even make multiple copies of drawing objects within seconds.

Using the copy function is quite similar to the way the move function is used. First, you need to select objects using any of the methods described earlier. Then you need to indicate a base point and a relocation (or destination) point. The copied objects are placed according to the relocation point.

Making Multiple Copies in a Rectangular Fashion

There are separate functions available in CADD that allow you to make multiple copies in a linear or rectangular fashion (commonly known as a rectangular array). You can make hundreds of copies within seconds. You don't need to enter a base point and a destination point. You just need to select the objects, specify how many rows and columns you need and the distance between them. (Illustrated with Fig. In CADD PRIMER)

Making Copies in a Circular Fashion

CADD allows you to make multiple copies of selected objects in a circular fashion (commonly known as a polar array). You need to enter the center point of array, number of copies required and the rotation angle. The center point of the array is a point around which the copies are arranged. The rotation angle determines the extent of the rotation, and the number of copies you specify are equally spaced between the rotation angle. (Illustrated with Fig. In CADD PRIMER)

Changing Drawing Appearance

CADD allows you to change the appearance of drawing objects in a number of ways. You can change the line type, color, size and style of all the drawing objects. Using the editing functions of CADD, you can change almost every factor that defines a drawing object.

When you enter a command to change the drawing appearance, you are prompted to select the objects you want to change. You can select the objects using any of the methods discussed earlier. After the selection is made, you can specify what you want to change, and the selected objects are changed accordingly.

The edit functions allow you to do the following:

- Change line type, color and layer of drawing objects.
- Change the radius value of arcs and circles.
- Change major axis, minor axis and rotation angle of the ellipses.
- Change the sharpness of curves of splines.
- Change the height, width, spacing, inclination, fonts and justification of text.
- Change the size, style, units, and accuracy of dimensions.
- Change the size and style of symbols, arrows, borders, and patterns.

Using Edit Functions as a Drawing-Aid Tool

The edit functions enable you to manipulate diagrams and make quick corrections in the following manners:

- Cutting drawing objects along an edge
- Drawing parallel lines and arcs
- Extending drawing objects to an edge
- Dividing an object into equal parts
- Making sharp and rounded corners
- Making chamfered corners

- Stretching a diagram
- Enlarging or reducing a diagram
- Rotating a diagram
- Mirroring a diagram

Cutting Drawing Objects Along an Edge

CADD allows you to erase drawing objects along a selected edge (this technique is often called trimming). When you use this function, you are prompted to select the drawing object that is to be used as the cutting edge and then select the objects that are to be erased along that edge. (Illustrated with Fig. In CADD PRIMER)

Drawing Parallel Lines and Arcs

CADD allows you to draw parallel lines, arcs or splines using previously drawn objects as a reference. This technique is often called offsetting. To draw an offset parallel line, you need to select the drawing object to be used as a reference and then specify the distance and direction of the offset. A parallel drawing object is drawn at the specified distance. (Illustrated with Fig. In CADD PRIMER)

Extending Drawing Objects to an Edge

CADD allows you to extend lines to a selected drawing object. Often you need to extend lines to construct a drawing and to fix any graphical errors. To extend lines, you need to select an edge to which the lines should extend and then select the lines to be extended. (Illustrated with Fig. In CADD PRIMER)

Dividing an Object into Equal Parts

CADD allows you place dividing marks on a drawing object such as a line, arc, ellipse or spline. To use this command, you need to select an object and specify how many divisions are required. This function places markers at equal distances on the drawing object. (Illustrated with Fig. In CADD PRIMER)

Making Sharp and Rounded Corners

CADD allows you to make fine corners of any two lines or arcs. This technique, often called filleting, is the quickest way to join the missing corners of lines and arcs. With this function active, to make a corner all you need to do is select the lines or arcs that have missing corners. CADD automatically extends or shortens the selected objects to form a corner. You can also specify whether you want a sharp corner or a rounded corner. (Illustrated with Fig. In CADD PRIMER)

Making Chamfered Corners

CADD allows you to make a chamfered corner between two lines. It works quite like the fillet command. When you enter the chamfer command, you are prompted to select the lines that are to be chamfered and enter a chamfer distance. The chamfer distance determines the size of the chamfer. (Illustrated with Fig. In CADD PRIMER)

Stretching Diagrams

CADD allows you to quickly change the size of diagrams by stretching lines, arcs, splines, etc. This function is very helpful to make quick alterations to drawings. To use the stretch function, you need to select the drawing objects to be stretched and specify the distance and direction of stretching. (Illustrated with Fig. In CADD PRIMER)

Enlarging or Reducing Diagrams

CADD allows you to enlarge or reduce diagrams in a convenient manner. To enlarge or reduce diagrams, you need to select the objects and enter a scale factor. The scale factor determines by how much the diagrams are to be reduced or enlarged. (Illustrated with Fig. In CADD PRIMER)

Rotating the Drawings

CADD allows you to rotate selected drawing objects to a specified angle. To rotate, you need to select the drawing objects, enter a reference point (or base point) and the rotation angle. The base point acts as a pivot point around which the objects are rotated. The rotation angle determines by how much the objects will be rotated and in which direction. (Illustrated with Fig. In CADD PRIMER)

Mirroring Drawings

CADD allows you to create mirror images of drawings. This capability is very useful when you want to draw something that is symmetrical on both sides. You need to draw only one half of the drawing; the rest of the drawing can be completed using the mirror function. To make a mirror image, you need to select the objects to be mirrored and indicate a mirror axis. The mirror axis is an imaginary line along which the diagram is mirrored. (Illustrated with Fig. In CADD PRIMER)

Steps to Draw an Engineer's Office

The following exercise explains how to draw a plan of a room that we will call an engineer's office. The engineer's office is a room 19 feet, 6 inches long and 13 feet, 6 inches wide, with one chamfered corner and a door in one corner. We will accurately draw this plan using drawing, editing and view-display functions. The plan is completed in 16 steps. (Illustrated with Figs. In CADD PRIMER)

AutoCAD MicroStation and Cadkey Terms

This topic lists important terms used in leading CADD programs. Refer to CADD PRIMER for details.

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